

TRANSACTIONS  
OF THE  
SAN DIEGO SOCIETY OF NATURAL HISTORY

VOLUME IX, No. 31, pp. 337-352

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OBSERVATIONS ON PLANTS AND INSECTS IN  
NORTHWESTERN BAJA CALIFORNIA,  
MEXICO, WITH DESCRIPTIONS OF  
NEW BEES

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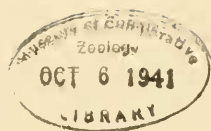


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SAN DIEGO, CALIFORNIA  
PRINTED FOR THE SOCIETY  
SEPTEMBER 26, 1941

7167

28,898



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Edward W. Nelson published a very valuable report on Lower California and its Natural Resources, as the first memoir in Volume XVI of the National Academy of Sciences (1921). He recognized three life-zones, the Upper Sonoran, Lower Sonoran and Arid Tropical, as including nearly all of the peninsula, but the Transition Zone was found at high elevations on the Sierra San Pedro Martir. The Upper Sonoran extends from the northern boundary and continues west of the San Pedro Martir mountains, down to the region of San Quentin, where it is abruptly replaced by the arid Lower Sonoran. This area, with which the present paper is alone concerned, is to be included in the San Diegan region, if it may be so called, so far as the biota is concerned. In the main, the species of plants and animals are the same as those of San Diego county, though there are some peculiar species, of which *Rosa minutifolia* is perhaps the most striking. The conspicuous *Agave shawii* is locally abundant and is only included in the United States flora on account of a few plants found just north of the boundary.

Munz, in his Manual of Southern California Botany (1935), records 353 species of flowering plants and three ferns as extending from Southern California into Baja California, but there are some common species, referred to as widely distributed, and also many introduced weeds, which are not included. I. M. Johnston, in Proceedings of the California Academy of Sciences (1924), enumerated 456 species of vascular plants as found by the California Academy expedition on the islands of the Gulf of California and the adjacent mainland. In this list, are only 50 which are common to the list of 356 species cited by Munz. The difference in the two lists is even more striking than these figures would suggest, since several of the species listed by Munz are desert plants (such as the three species of *Coldenia*, *Cereus giganteus*

and *Mohavea*) and belong to the Lower Sonoran. It may be said that the biota of northwestern Baja California is radically distinct from that of the rest of the peninsula. Although it is not very far from Ensenada over the San Pedro Martir mountains to the region of the Gulf, any traveler who makes this journey enters an entirely new world. The evidence from the plants is confirmed by that from the bees, which I have studied. I published an account of the bees collected by Van Duzee on the Academy expedition to the islands of the Gulf and the adjacent mainland—the same localities from which Johnston's plants were obtained. The list of bees is a long one, and includes 35 or more species which have also been taken in California, but there is hardly anything in common with the list, given below, of species which were obtained this year in Baja California. Part of the difference may be due to season, but with such a different flora, and a different climate, it is not surprising that the bee fauna is different.

A good mark for the recognition of the arid, so-called desert area is the presence of *Encelia farinosa* rather than *E. californica*. The latter abounds along the coast, and was found by us at Ensenada. It is nevertheless true that the coast biota does include some elements usually associated with the desert, such as the bee *Anthophora* n. sp. found on *Lycium*, and the moths *Trichosellus cupes* var. *deserticola* and *Jocara trabalis*.

In order to get a fair idea of the insects of this region, it will be necessary to collect at all seasons of the year. Our visits were from March 23 to 26 and April 10 to 27, 1941. I was astonished to see the difference in the collection of moths obtained in March from that obtained in April. The same thing was true of the bees, which were collected much more carefully. Species obtained on the first expedition were lacking in the collection of the second, and vice versa. Thus in March *Andrena perimelas* and the fine new *A. ensenadensis* appeared to be fairly common; in April no trace of these could be found. In March *Hesperapis nitidula* was represented by a single specimen taken at Descanso Bay; in April it was very common at Ensenada. Also, the large number of species represented by single individuals indicates the existence of numerous others which did not happen to be captured. Many plants which in California are visited by numerous species of bees gave us little or nothing in Baja California. In vain we watched the species of cactus, the *Mesembryanthemum*, the *Cryptantha intermedia*, the *Eriogonum fasciculatum*, the *Lotus scoparius* and other familiar

plants. The common *Baeria*, apparently to be called *B. gracilis* (DC.), produced one specimen of *Andrena baeriae*. On the other hand, *Layia platyglossa* was very attractive to bees in April. *Viguiera laciniata* Gray (det. Ewan), very common at Ensenada, produced no bees.

Our work in Baja California was made possible by the kindness of Dr. and Mrs. J. T. Scott, of San Diego, who took us to Ensenada. While there, we lived in one of the very comfortable Hussong cabins, a short distance north of town, and were indebted in various ways to Mr. and Mrs. John Hussong, and Mr. and Mrs. Francisco Rosas, managers of the cabins. Mrs. Hussong took us to Santo Tomas in March, and on that occasion we got a number of interesting bees, some of them new. Mr. and Mrs. Carr, in the Mañadero Valley, asked us to visit their home, and while there we not only added to our collections, but learned many things about Baja California and its problems. We became greatly interested in the country and its people, but this is not the place to discuss matters of politics and sociology. One morning, we were allowed the use of the theatre in Ensenada, and showed a number of our moving pictures of animals to the whole school population, filling the theatre twice. The children were vociferous in their approval.

### PLANTS

The flowery meadows, with *Orthocarpus purpurascens*, *Layia*, *Chaenactis*, *Brodiaea capitata*, *Erodium cicutarium*, *Sphaeralcea ambigua*, *Eschscholtzia*, *Gilia dianthoides*, *Lupinus truncatus*, *Malvastrum fasciculatum*, *Isomeris arborea*, *Delphinium parryi*, *Lotus scoparius*, *Oenothera micrantha*, etc., look exactly like those of Southern California. The curious *Franseria chenopodiifolia* Benthams was abundant at Ensenada. The endemic *Aesculus parryi* was found in various places near Ensenada. Another plant that we expected, *Fremontia mexicana* (Davidson), was not found. The late Miss Kate Sessions stayed with our friends the Carrs when, according to report, she collected the seeds from which this beautiful plant has been introduced into cultivation, and has now become a familiar sight in California gardens. But now, I am informed, it is no longer to be found in the original locality, and no one knows where there are any wild plants. Has this species shared the fate of the *Franklinia*?\*

\* Since the above was set in type, I have received the following memorandum from Frank F. Gander, Botanist of the San Diego Society of Natural History: "Kate Sessions told me on January 15, 1936, that she had never collected seed of this species near Ensenada nor elsewhere in Lower California. In a letter to me dated January 10, 1936, she had previously stated that she obtained her first seed from a plant which was growing at the corner of Fourth and Fir Streets, San Diego, and which she thought had been planted by C. R. Orcutt. There is a good stand of this species in canyons of Otay Mountain in this County, and two specimens in the herbarium at Pomona College are labelled as from San Antonio del Mar in Lower California."—Author.

*Eriodictyon parryi* (Gray), common at Ensenada, was new to me, and I thought very astonishing, with its very strong odor and broad, sharply serrate leaves, shining dark green above, pale below. The dark purple corolla is tubular and very hairy.

*Eriophyllum confertiflorum laxiflorum* Gray, with its bright sulphur yellow flowers was conspicuous. It is appropriately called golden yarrow.

*Lonicera subspicata* H. & A. was peculiar for having the leaves glabrous beneath, not yellowish, the leaves not strongly bicolored. It appears nearest to var. *denudata* Rehder, but deserves further study.

*Prunus ilicifolia* Walp. at Ensenada was quite ordinary, not approaching the island species.

*Anagallis arvensis* L., imported from Europe, abounds.

*Convolvulus occidentalis* Gray is represented by a variety with long-pointed bracts, longer than calyx, flowers externally with pinkish bands, leaves glabrous. This is quite distinct from *C. macrostegius* of the islands.

*Gilia lutea longistylis* Munz was a form with very pale yellow flowers.

*Montia linearis* (Douglas) differed from the description by having the two sepals partly red and partly green, not white margined, acuminate; the broad petals very white, apically obtusely angulate, leaves linear.

*Trifolium variegatum* Nuttall, form with very narrow long leaflets.

*Antirrhinum nuttallianum* Bentham, common.

*Castilleia stenantha* Gray, typical.

*Silene gallica* L., very abundant.

*Platanus racemosa* Nuttall, typical.

*Diplacus linearis* (Bentham). A large species with long bright yellow flowers; calyx lobes not ciliate. Other plants had the flowers pale orange. Perhaps not strictly *D. linearis*.

*Rafinesquia neomexicana* Gray (not *R. californica*) at Ensenada.

*Eschscholtzia peninsularis* Greene, with smaller flowers than *E. californica*, was very abundant. Some of the plants are evidently biennial or perennial, and perhaps the so-called annual habit is merely due to the growth of numerous seedlings after the rains, which flower early and perish during the dry season. Thus it seems likely that *E. peninsularis* has no valid standing.

The most interesting plant we found was *Rosa (Hesperhodos) minutifolia* Engelm., which is very abundant at Ensenada and southward, growing on hillsides not far from the sea. It is entirely confined to this region, and does not occur in the United States. It is a very distinct species. *R. stellata* Wootton is by no means a subspecies of it, as has been suggested. A remarkable feature is that the lateral branches curve over in an arch-like manner, and take root at the ends where they touch the ground. This causes inconvenience to travelers

on horseback, the horses putting their feet in the loops and stumbling. Mrs. Ruth Husson took us to see the white-flowered variety, which is not uncommon, and forms large patches in places. The petals are white, with a large rosy blotch at the base, which fades out in old flowers. This is the *R. minutifolia* f. *alba* Bennett, 1888. I have not seen Bennett's publication, and do not know whether it is adequate, but at any rate the name is properly published by Gravereaux in "Les Roses Cultivées à L'Hay" (1902, p. 156). Boulenger and Hirst treat *Hesperhodos* as a genus; Rehder, in his revised manual (1940), treats it as a subgenus. Boulenger has discussed the matter at length, and describes the characters regarded as generic in detail.

We found only one species of *Calochortus*, but this in great abundance. It is *C. splendens* Douglas, of the southern race *C. splendens davidsonianus* (*C. davidsonianus* Abrams, 1923). Occasional flowers are pink, and some almost white. Mrs. Florence B. Wilson found a yellow Mariposa Lily, *Calochortus weedii* Wood, at Ensenada, where it is very local. It was long ago collected in this locality by Brandegee. This is nearly at sea-level; at higher altitudes is found a race *C. weedii peninsularis* Ownbey, 1940, with pale yellow petals, glabrous at the apex.

One gets the impression that the flora tends to produce local races or subspecies southward, and it may be that this could be confirmed by a competent botanist. Having studied the biota of the islands off the coast of Southern California, I was naturally on the lookout for resemblances. There was little to be found, though the *Perdita* appears to be no more than a race of a species hitherto regarded as endemic on San Miguel Island. A common *Andrena* was first described from Catalina Island, but it has since been found on the mainland of California.

## BEEES

My account of the bees has only been made possible by Mr. P. H. Timberlake, who has critically examined the collection, giving me his determinations, and comparing the specimens with the rich collection at the Citrus Experiment Station, Riverside, California. All the new species, including the Types, will be found in the collection of the Citrus Station, but it is proposed to send a good collection to the San Diego Natural History Museum, in the hope that the work of building up a collection there of Baja California bees may enlist the interest of one or more entomologists in San Diego.

*Halictus* n. sp. Timberlake Ms. (named after Bridwell). Ensenada, March, at *Coreopsis maritima*. Common at Ensenada in April, visiting *Layia*. This is a common species in Southern California.

*Halictus mellipes* Crawford (Timberlake considers this a race of *H. trizonatus* Cresson). Mesa three miles south of ruins of San Miguel Mission, March 23 (Fred H. Wylie). I have taken it in the Yosemite, California.

*Halictus punctatoventris* Crawford. Ensenada. Common in March, one at *Rosa minutifolia*. Ensenada, April 19, one at *Layia*. Described from Claremont, California.

*Halictus helianthi* Cockerell. Mañadero Valley, April 26 (W. P. Cockerell).

*Halictus* n. sp. Timberlake Ms. Ensenada, one, April 15. Known from California as far north as Davis. Related to *H. megastictus* Ckll., from San Miguel I., but differs in wings, tegulae, etc.

*Halictus ligatus* Say. Ensenada, April 16, one at *Encelia californica*. Widely distributed in North America.

*Halictus sisymbrii* Cockerell. Ensenada, March and April, common. Visits *Eschscholtzia*, *Convolvulus* and *Calochortus*. It was not taken on *Layia*. One was taken at San Francisco, April 25. There are two aberrant females, which Timberlake refers to *H. sisymbrii*, though I had at first separated them as two additional species, largely on the characters of the metathorax. One is from Ensenada, at *Calochortus*, April 24 (W. P. C.); the other from Mañadero Valley, April 25 (W. P. C.). Additional material may show that these should be separated.

*Halictus nigrescens* Crawford. On April 17, at Ensenada, females were found rather common in flowers of *Romneya trichocalyx*, being the only bee visiting these flowers. In the Mañadero Valley, in April, a male was taken on a cultivated umbellifer. It is small, black, with very long antennae, clypeus with a dull yellow mark at end. It differs from typical *H. nigrescens* by the dark front tibiae, and more material may indicate that there is a distinct race.

### ***Melitta maritima* n. sp.**

I had referred this to *M. wilmattae* Ckll., known from a single female taken near Yuma, Arizona. The present insect is a male, and has the metathoracic characters of *M. wilmattae*, not of *M. californica* Viereck, which came from the southern part of the peninsula. All three inhabit quite different life-zones, which is an argument for considering them distinct. *M. maritima* differs from the female *M. wilmattae* by the well developed malar space, the long black hairs at sides of face, and the abundant intermixture of black hairs on thorax above. The antennae are long and black; the abdomen has long hair on first tergite, and an interrupted white hair-band on second. The inner tooth of the mandibles is not very remote from the apex. Length about 13 mm., anterior wing about 9.

Ensenada, Baja California, at flowers of *Encelia californica* Nuttall, April 13, 1941 (W. P. Cockerell).

The second cubital cell is comparatively narrow, higher than long, the intercubiti practically parallel; the basal nervure falls a little short of nervulus. The malar space, though well developed, is not as large as in the African *M. longicornis* Friese. The segments of the flagellum are not evidently nodose beneath, as they are in the type of the genus, *M. tricornis* Kirby (*M. leporina* Panzer). In Friese's table of European males, this runs out at 3, because the hair on first two tergites of abdomen is white, not fulvous. There is a very strong superficial resemblance to the Siberian *M. microstigma* Ev., but this differs by the strongly nodulose flagellum. The first recurrent nervure joins the second



cubital (submarginal) cell well before the middle, as in *M. melanura* Nyl. and other species, not in the middle as in *M. haemorrhoidalis* Fabricius. The nervures are black.

*Andrena oenotherae* Timberlake. One male, Descanso Bay, March 23. Described (1937) from California.

*Andrena candida* Smith. One male, Ensenada, April 17 (W.P.C.); one female near Santo Tomas, at *Ceanothus*, March 20. Described (1879) from Vancouver Island.

*Andrena perimelas* Cockerell. Ensenada, March, females at *Eschscholtzia californica*, *Rosa minutifolia*, etc. Described from California.

*Andrena osmioides* Cockerell. One female, mesa three miles south of ruins of San Miguel Mission, March 23 (Wylie). Described (1916) from California.

*Andrena baeriae* Timberlake. Male, mesa three miles south of ruins of San Miguel Mission, March 23. Female, one only, at flowers of *Baeria*, Ensenada, April 24. Described (1941) from California.

*Andrena* n. sp. Timberlake Ms. (Type from California). One female on *Calochortus splendens davidsonianus* (Abrams). Timberlake's manuscript name refers to its occurrence on *Platystemon*.

*Andrena escondida* Cockerell. Described from a male collected on Catalina Island. Ensenada, one male and many females, the latter at flowers of *Layia platyglossa*, collecting pollen. Timberlake had females from the mainland of California, from *Layia*.

### ***Andrena ensenadensis* n. sp.**

Female. Length about 11.5 mm., anterior wing about 9 mm.; black, with abdomen faintly greenish; abundant long white hair on face and cheeks, on occiput faintly reddish; hair of thorax above dense, erect, bright fox-red, of pleura and metathorax white; sides of first abdominal tergite with long white hairs, apex of abdomen with black hair; no abdominal bands except linear ones, usually concealed, at bases of tergites 3 and 4; facial quadrangle broader than long; facial foveae inconspicuous, hidden by the long spreading hairs of face; labrum shining, the process short and rounded, entire; clypeus and front dully, densely minutely punctured; antennae black, third joint long; thorax dorsally dull, the surface mainly hidden by hair; area of metathorax slightly shining, not evidently sculptured; tegulae black, wings strongly dusky, nervures black; stigma well developed, dark reddish with a black border; basal nervure meeting nervulus; second submarginal cell receiving first recurrent nervure in middle, first recurrent ending about as far from end of second submarginal cell as second recurrent from end of third; legs black with largely black hair, but long and white on underside of femora, and more or less white on hind tibiae anteriorly; spurs dark reddish; abdomen moderately shining, very minutely punctured; second tergite in middle depressed less than half; venter of thorax with black hair in front of the very large, pure white flocci.

Ensenada, Baja California, females at *Rosa minutifolia*, *Coreopsis maritima*, etc., March, 1941.

This resembles *A. subtilis* Smith and *A. semicyanea* Ckll., but differs by the dark hair at end of abdomen. *A. subtilis* and *A. ensenadensis* have sooty hair on hind tibiae; *A. semicyanea* has it all light. *A. bryanti* Ckll. is allied, and has dark hair on hind tibiae, but hair of thorax above is not red, and the face is not so broad.

*Andrena* n. sp. with greenish abdomen. One female at *Layia platyglossa*, April 24, at Ensenada. This is very like a species taken by Gorton Linsley on *Hemizonia* at Salinas, California, and is perhaps not distinct. The Salinas bee is somewhat larger, with broader second submarginal cell, and dorsal hair of thorax paler.

### *Diandrena sanctorum* n. sp.

Female. Length about 5.5 mm., anterior wing 4; dark olive green, the head and mesonotum dullish, the abdomen and truncation of metathorax shining; flagellum rufous beneath except at base; legs black, small joints of tarsi pale rufous; head and thorax with white hair, abundant on face, mesopleura and sides of metathorax; head considerably wider than long; disk of clypeus black or nearly so, the upper margin more or less pink; facial foveae white, moderately broad; tegulae shining dark brown; wings greyish, stigma dusky reddish, nervures pale; abdomen oval, the tergites with pallid margins, second and fourth with bands of short hair, apex with greyish hair; the first tergite is highly polished.

This is similar to *D. beatula* Ckll. (of which Timberlake believes *D. clariventris* Ckll. to be the male), but compared with the type of that species it is smaller and less robust, with shorter head. Compared with the type of *D. clariventris*, the color is quite different. Timberlake has placed a male cotype of *D. puthua* Ckll. (described from Pasadena) with *D. beatula*. If it is the same species, *D. puthua* has six years priority. The male *D. clariventris* has the mesonotum and scutellum dark blue, or blue-green; *D. puthua* has them green.

Compared with *D. marinensis* Ckll., this differs by the much greener abdomen, and other characters. Timberlake has a long series of *D. marinensis* (including a cotype); it occurs, on *Baeria*, at Strathmore, Mt. Diablo, Davis, etc. *D. cyanosoma* Ckll. is larger and more robust; in addition to the Type from Claremont, Timberlake has specimens from the Gavilan. *D. sperryi* Ckll. differs by the narrower bluish abdomen, etc.; Timberlake has only a cotype and has not collected it himself. Various other species, as *D. parachalybea* Vier., *D. chalybioides* Vier., *D. nothocalaidis* Ckll., and *D. chalybaea* Cresson, are much larger. I examined five undescribed species, with Timberlake Ms. names, which are all quite different; so also are *D. olivacea* Vier., *D. gnaphalii* Ckll., and *D. foxii* Ckll.

*D. sanctorum* belongs to the group with partly plumose scopa on hind legs, collecting, as Timberlake notes, pollen from vernal Compositae.

Santo Tomas, Baja California, March 26, 1941 (Cockerell).

***Parandrena atypica* n. sp.**

Female. Length about 7.5 mm., anterior wing about 5.5; robust, black, the abdomen faintly greenish; hair of head and thorax rather scanty, long and white at sides of face, on mesopleura and at sides of metathorax, slightly brownish on thorax above; head broad, malar space linear, labrum shining; clypeus shining, especially apically, but the sides granular and dull, disc distinctly punctured and with a longitudinal depression; front and vertex dull; facial foveae short, not very broad, covered with white pubescence; flagellum, except basally, dusky reddish beneath; mesonotum dullish, appearing granular; scutellum shining, with a median groove; area of metathorax dull; tegulae shining dark brown; wings dusky hyaline; stigma large, pale reddish with a dark margin, nervures brown; basal nervure falling far short of nervulus, second submarginal cell long, receiving recurrent nervures about equally distant from base and apex; legs black, with pale hair, dense and abundant on hind tibiae; abdomen elongate-oval, moderately shining, disc of first tergite polished, second tergite depressed much less than half; tergites 2 to 4 with white hair-bands, failing in middle on second and third; apex with dark grey hair.

Ensenada, Baja California, March 25, 1941 (Cockerell). At flowers of *Rosa minutifolia*.

A species bearing a Ms. name by Timberlake, which I have from the Gavilan, California, April 17 (W. P. C.) is evidently closely allied, but is smaller and less robust, with a smaller head. It is possible that the difference is not more than subspecific. There is a superficial resemblance to *P. mendosa* Viereck, which Timberlake has taken as far south as Riverside, but the thoracic pubescence is quite different. Various other species compared are not at all closely related.

*Ancylandrena atoposoma* Cockerell. Ensenada, April 15, male at *Convolvulus*.

***Dufourea descansana* n. sp.**

Male (Type). Length about 5.7 mm., wings short, about 3.3 mm.; highly polished, dark steel-blue or rather greenish, the pubescence pure white, dense and abundant over the mouth; scape very large, subglobular; flagellum brown beneath except the basal part; head broader than long, front dull but vertex highly polished; mesonotum polished; tegulae small and black; wings faintly dusky, iridescent, stigma rather large, dark brown; nervures pale brown, but the basal nervure falling some distance short of nervulus; second submarginal cell receiving first recurrent nervure nearer to base than second to apex; legs black with white hair, hind femora incrassate in middle; abdomen highly polished, the tergites with thin white hair-bands, only developed at sides on the first two.

Female. Similar, but antennae ordinary, the scape normal, the flagellum short and thick; clypeus black, shining; mesonotum and scutellum shining dark greenish.

Descanso Bay, Baja California, March 23, 1941 (Cockerell).

The male antennae are relatively short, not greatly elongated as they are

in the Type of *Halictoides*. Hedicke uses this as a generic character, separating *Dufourea* from *Halictoides*. This was carefully compared with the known species richly represented in the collection at the Citrus Station, but is evidently distinct. *D. truncata* Timberlake appears to be closely allied, but is less robust, with a smaller, narrower head. The female differs by sculpture of front, the male by the flagellum, which is nude beneath in *D. truncata*, hairy beneath in *D. descansana*.

*Dufourea viridis* Timberlake. Santo Tomas, March 26, 1941. Male coll. W. P. C., female coll. Cockerell. A species described this year from California; our specimens are not quite typical.

*Dufourea* sp. Female only. Very near to *D. descansana*, and at first thought identical. Ensenada, at flowers of *Calochortus*, April 20 (W. P. C.).

*Dufourea* sp. females only. Ensenada, at flowers of *Rosa minutifolia*, March 25. (W. P. C., Cockerell). This and the last are perhaps new, but males are desirable for purposes of description.

*Panurginus californicus* Cresson. Ensenada, both sexes; the female April 20, at *Layia*. Male, Santo Tomas, March 26.

#### ***Perdita layiae basalicola* n. subsp.**

Female (Type). Somewhat smaller, with more extensive face markings, the clypeus pale except the upper and lower margins, base of mandibles white, and small triangular lateral face-marks.

Male. Clypeus, labrum, mandibles and triangular lateral face-marks white.

Ensenada, Baja California (Type locality), abundant at flowers of *Layia* in April. Santo Tomas, March 26, 1941 (W. P. C.), very numerous in one restricted locality.

*Hesperapis nitidula* Cockerell. Ensenada, April, very common at flowers of *Layia*, mostly females, but not collecting pollen. Timberlake says that in California it collects pollen from *Oenothera*. We did not find it on *Oenothera micrantha*, which was common in the same place. A female was taken at Descanso Bay, March 23, by Mrs. Vivian Scott, and was at first thought to be a new species, but subsequent studies led to its reference to *H. nitidula*, a species described in 1916 from Claremont, California. The Descanso Bay specimen has the following characters:

Length about 7.5 mm., anterior wing about 6.5 mm.; black, with white hair, slightly flavescent on thorax above and abdominal bands; apical part of mandibles obscurely reddish; labrum with a patch of shining white hair; face with dense long hair; vertex with long black hair, and a little black on mesonotum and clypeus; facial quadrangle broader than long; vertex polished and shining; apical half of flagellum dusky reddish; mesonotum moderately shining, well punctured; scutellum dull; tegulae dark reddish; wings hyaline, slightly greyish; stigma slender, dusky reddish, nervures dark brown; basal nervure falling far short of nervulus; first recurrent nervure much nearer base of second submarginal cell

than second is to apex; legs black with pale hair, spurs white; abdomen dull, very minutely punctured, the tergites with rather broad bands of faintly yellowish tomentum. The abdominal bands are broader than is usual in *H. nitidula*, and not so white.

*Nomada edwardsii* Cresson. Three miles south of ruins of San Miguel Mission, March 23 (Wylie); a female, which can only be referred to *N. edwardsii*, but it differs by the entirely yellow scutellum. It is not *N. avalonica* Ckll., though it resembles it in the abdominal bands. It may possibly be the female of *N. edwardsii* var. *australior* Ckll., which was based on a male from Los Angeles County, California.

*Emphoropsis rugosissima* Cockerell. Ensenada, March 24 (W. P. C.).

*Diadasia difficilis* Timberlake. Ensenada, both sexes at *Sphaeralcea ambigua* (W. P. C.), and one male at *Layia* (Cockerell). This is so close to *D. luzzi* Ckll., described from Wyoming, that Timberlake gives it only subspecific rank.

*Diadasia vallicola* Timberlake. Ensenada, at *Sphaeralcea ambigua*, one female, April 13 (W. P. C.). Previously known from California and Arizona.

*Xenoglossodes davidsoni* Cockerell. Ensenada, at *Malvastrum fasciculatum*, one male, April 17. Timberlake has one from San Quentin, Baja California, April 10, 1933 (B. J. Hull). It is rare in California; Timberlake took one on *Convolvulus* in the Puente Hills, near Whittier.

*Tetralonia albopilosa* Fowler. Ensenada, two females at *Astragalus*, April 16 (W. P. C.). Timberlake refers here the supposed *T. robertsoni* Ckll. recorded from California.

*Tetralonia* sp. Near Santo Tomas, at *Lupinus*, March 26, one female (W. P. C.). Timberlake has taken this at Riverside, California, on *Nemophila*. He has placed it, somewhat doubtfully, with a male to which he has given a manuscript name.

*Tetralonia belfragei* Cresson. Velladero Valley, at *Calochortus*, April 25, one female. Compared with one from Dallas, Texas, it has a shorter head, but it is surely the same species.

*Anthophora* n. sp. Timberlake Ms. Mañadero Valley, in the Carr garden, April 25, at *Lycium*, both sexes. Timberlake has it from the Colorado Desert and from Buckeye, Arizona.

#### ***Anthophora* (*Micranthophora*) *curta* var. *ensenadensis* n. var.**

Male. Related to *A. curta* Provancher, but clypeus entirely black; labrum pale yellow with two black spots at base, base of mandibles broadly pale yellow; antennae black; hair of head and thorax all pure white; tarsi ordinary, the apical joints pale reddish; abdomen with five very distinct bands of appressed white pubescence; sixth tergite with a sharp dark tooth at each corner.

Ensenada, Baja California, April 15, 1941 (W. P. Cockerell).

The eyes are blackish, not green. The structure of the abdomen associates

it with *A. curta*, and Timberlake finds that he has some similar specimens in his series of California *A. curta*.

*Osmia*, probably *O. nemoris* Sandhouse, but much worn. Velladero Valley, at *Calochortus*, April 25.

*Ashmeadiella californica* Ashmead. We did not take this, but Michener records it as taken by Timberlake twelve miles north of Ensenada, August 1.

*Ceratina acantha* Provancher. Santo Tomas, March 26 (W. P. C.); Ensenada, female at *Convolvulus*, April 20 (W. P. C.).

*Ceratina arizonensis* Cockerell. Near Descanso Bay, March 23.

*Bombus crotchii* Cresson. Ensenada.

*Bombus vosnesenskii* Radoszkowski. Ensenada. Visits *Astragalus*.

*Bombus edwardsii* Cresson. Ensenada; San Francisquito, April 25 (W. P. C.); Mañadero Valley (Julia Zamore).

*Bombus californicus* Smith. Ensenada, April 17 (W. P. C.).

## BUTTERFLIES AND MOTHS

We did not plan to collect Lepidoptera, but during our first visit at the Hussong cabins (north of Ensenada), March 23 to 26, moths were very abundant at the electric lights, and we obtained a series of interesting species, which I handed to Mr. John L. Sperry, of Riverside, California, who has very kindly furnished a report on them. When we returned to the locality in April, we naturally expected to find many more moths, but the catch was poor, owing to the cold north winds. The species obtained were sent to the U. S. National Museum along with other insects. Few butterflies were seen. In March, the common butterfly was what appeared to be the ordinary *Caenonympha californica* Westwood & Hewitson, but to my surprise the single specimen collected is considered by Sperry to probably represent a new race, distinguished by the large whitish markings at the base of the secondaries beneath. In April the commonest butterfly was *Vanessa cardui* L.

Mr. Sperry's report on the moths of the March expedition is as follows:

*Apantesis proxima* var. *autholea* Boisduval. Common throughout this area.

*Apantesis ornata* form *ochracea* Stretch. Always a good thing.

*Laphygma exigua* Hbn. Very common throughout the southwest.

*Aseptis perfumosa* Hampson. Locally common in Southern California.

*Trichosellus cupes* var. *deserticola* B. & McD. A desert species and variety.

*Noctua rivulosa* Smith. Not too common in this area.

*Zosteropoda hirtipes* Grote. Widely distributed but not common in the southwest.

*Oncocnemis cibalis* Grote. Possibly, the specimen too badly rubbed to be

certain; rather a good thing.

*Ichthyura apicalis* Walker. Common in this area.

*Nemoria delicataria* Dyar. Common around San Diego.

*Eupithecia* sp. in the *miserulata* group.

*Camptogramma neomexicana* Hulst. Common from Texas to the Pacific in that latitude.

*Euphyia implicata* Gn., or *williamsi* Swett if you prefer. It is the dark form; this insect feeds on the sand verbena (*Abronia*), and is locally very common in the early spring.

*Perizoma epectata* B. & McD. Evidently San Diego, the Type locality, is close to the northern limit of this species.

*Plataea californiaria* H.-S. Probably a good new race. Dr. Comstock has a small series of this.

*Synaxis cervinaria* Packard. Common in the Los Angeles district and found as far north as the Oregon line.

*Jocava trabalis* Grote. Rather common in the deserts here.

*Diasemia* sp. I cannot match this one.

Pyralid, not known to me. A striking olive green species.

The April collection, unfortunately in rather poor condition, although the species are not very many, is remarkable for having only one or two specimens common to the March series. This difference parallels to a considerable extent our results from the study of the bees. The April collection was determined by three specialists, as follows:

(1) Determined by Carl Heinrich:

*Noctuella* sp. probably *bububattalis* Hulst. Need to check with holotype.

*Ephestioides nigrella* Hulst.

*Homoeosoma* sp. May be new; have a few similar specimens from Carmel, California, received through W. H. Lane.

*Epilema* sp. May be a small example of *strenuana* Walker.

*Monoleuca* sp. presumably *occidentalis* B. & McD.

(2) Determined by J. F. G. Clarke:

*Aseptis genatrix* Grote.

*Peridromia margaritosa saucia* Hbn.

*Autographa brassicae* Riley.

*Oncocnemis perscripta* Gn.

*Platynota stultana* Walsingham.

*Bucculatrix* sp.

(3) Determined by H. W. Capps (Geometridae):

*Neoterpes edwardsata* Packard.

*Perizoma custodiata* Gn.

*Camptogramma neomexicana* Hulst.

*Eupithecia* sp., probably *behrensata* Packard.

After our first expedition, Captain W. P. Medlar of the San Diego Society of Natural History, went down to the Hussong Cabins, and made a good collection. After he left, other moths were collected for him by Francisco Rosas. I hope that other collections will be made at different seasons of the year, and eventually reported on in full.

### FLIES

No serious attempt was made to collect Diptera, but the common syrphids *Mesogramma marginata* Say, *Melanostoma stegnum* Say, and *Eupeodes volucris* O. S. were abundant on flowers. At the same time the Bombyliids *Bombylius albicapillus* Loew and *Ploas atratula* Loew were collected, and undetermined species of *Rhizophomyia* and *Hydrophorus*. All these were determined by C. T. Greene. An Asilid taken by my wife at Ensenada is referred by Dr. M. James to *Heteropogon senilis* Bigot.

### SCALE INSECTS

Very few Coccidae were seen, but no special search was made for them. I am indebted to Dr. Harold Morrison for advice.

*Phenacoccus gossypii* Townsend and Cockerell. On cultivated *Pelargonium*, Carr garden, Meñadero Valley.

*Dactylopius opuntiae* Cockerell. On a tree *Opuntia*, presumably *O. megacantha*, Ensenada.